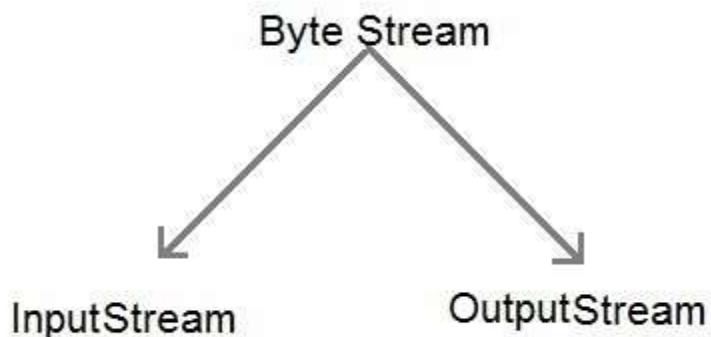# Java IO Stream

Java performs I/O through **Streams**. A Stream is linked to a physical layer by java I/O system to make input and output operation in java. In general, a stream means continuous flow of data. Streams are clean way to deal with input/output without having every part of your code understand the physical.

Java encapsulates Stream under **java.io** package. Java defines two types of streams. They are,

1. **Byte Stream :** It provides a convenient means for handling input and output of byte.

2. **Character Stream :** It provides a convenient means for handling input and output of characters. Character stream uses Unicode and therefore can be internationalized.

Java Byte Stream Classes

Byte stream is defined by using two abstract class at the top of hierarchy, they are InputStream and OutputStream.

Java IO Streams

These two abstract classes have several concrete classes that handle various devices such as disk files, network connection etc.

Stream class	Description
BufferedInputStream	Used for Buffered Input Stream.
BufferedOutputStream	Used for Buffered Output Stream.
DataInputStream	Contains method for reading java standard datatype
DataOutputStream	An output stream that contain method for writing java standard data type
FileInputStream	Input stream that reads from a file
FileOutputStream	Output stream that write to a file.
InputStream	Abstract class that describe stream input.

Java IO Streams

|	
OutputStream	Abstract class that describe stream output.
PrintStream	Output Stream that contain print() and println() method

Some important Byte stream classes.

These classes define several key methods. Two most important are

1. read() : reads byte of data.

2. write() : Writes byte of data.

Java Character Stream Classes

Character stream is also defined by using two abstract class at the top of hierarchy, they are Reader and Writer.
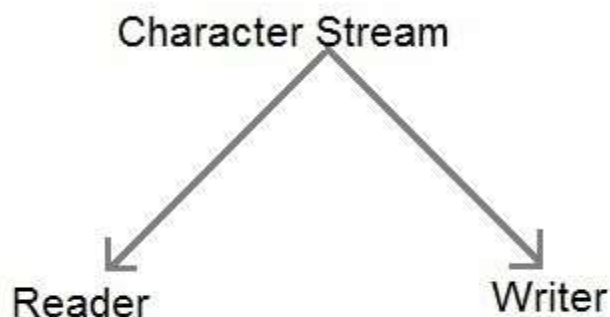
These two abstract classes have several concrete classes that handle unicode character.

Java IO Streams

Some important Charcter stream classes

Stream class	Description
BufferedReader	Handles buffered input stream.
BufferedWriter	Handles buffered output stream.
FileReader	Input stream that reads from file.
FileWriter	Output stream that writes to file.
InputStreamReader	Input stream that translate byte to character
OutputStreamReader	Output stream that translate character to byte.
PrintWriter	Output Stream that contain print() and println() method.
Reader	Abstract class that define character stream input

Java IO Streams

Writer	Abstract class that define character stream output

Reading Console Input

We use the object of BufferedReader class to take inputs from the keyboard.

Object of BufferedReader class

BufferedReader br = new BufferedReader(new
                                    InputStreamReader (System.in));

{ *InputStreamReader* is subclass of Reader class. It converts bytes to character. }

Console inputs are read from this.

Reading Characters

read() method is used with BufferedReader object to read characters. As this function returns integer type value has we need to use typecasting to convert it into **char** type.

```
int read() throws IOException
```

Copy
Below is a simple example explaining character input.

```
class CharRead
```

Java IO Streams

```java
{

  public static void main( String args[])

  {

    BufferedReader br = new Bufferedreader(new
InputstreamReader(System.in));

    char c = (char)br.read();     //Reading character

  }

}
```

Copy

Reading Strings in Java

To read string we have to use readLine() function with BufferedReader class's object.

```java
String readLine() throws IOException
```

Copy

Program to take String input from Keyboard in Java

```java
import java.io.*;

class MyInput

{
```

Java IO Streams

```java
   public static void main(String[] args)

   {

      String text;

      InputStreamReader isr = new InputStreamReader(System.in);

      BufferedReader br = new BufferedReader(isr);

      text = br.readLine();     //Reading String

      System.out.println(text);

   }

}
```

Copy

Program to read from a file using BufferedReader class

```java
import java. Io *;

class ReadTest

{

   public static void main(String[] args)

   {

      try

      {

         File fl = new File("d:/myfile.txt");
```

Java IO Streams

```java
        BufferedReader br = new BufferedReader(new FileReader(fl))
;

        String str;

        while ((str=br.readLine())!=null)

        {

          System.out.println(str);

        }

        br.close();

        fl.close();

    }

    catch(IOException   e) {

      e.printStackTrace();

    }

  }

}
```

Copy

Program to write to a File using FileWriter class

```java
import java. Io *;

class WriteTest

{
```

Java IO Streams

```java
public static void main(String[] args)

{

  try

  {

   File fl = new File("d:/myfile.txt");

   String str="Write this string to my file";

   FileWriter fw = new FileWriter(fl) ;

   fw.write(str);

   fw.close();

   fl.close();

  }

  catch (IOException  e)

  { e.printStackTrace(); }

 }

}
```